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**THE INTERNATIONALISATION OF SMEs FROM CHINA: THE CASE OF
NINGXIA HUI AUTONOMOUS REGION**

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THE INTERNATIONALISATION OF SMEs FROM CHINA: THE CASE OF NINGXIA HUI AUTONOMOUS REGION

ABSTRACT

The paper aims to study the international expansion of SMEs in an emerging country. Mathews' (2006) Linkage–Leverage–Learning (LLL) model is the framework applied to analyse the process of international expansion of SMEs. To operationalise the study of the barriers, the LLL model was linked to the work of Leonidou (2004). The data was collected from 125 SMEs operating in Ningxia, China, and then analysed using multivariate regressions; the models used the firms' export intensity at the regional, national, and international level as dependent variables. Four models were run: two analysing the internal and external barriers hindering firms' international expansion, and the other two models studying the characteristics of Chinese international companies (state funding and ownership) as independent variables. The results show that 12 of the barriers defined by Leonidou are hindering the expansion of Ningxia's SMEs, that the ownership from the state does not play an important role in this expansion, and that the support from the state in the form of funds is helpful in the first stages of the expansion (regional level) and the funds from private sources are key to cross the country's boundaries.

Keywords: Internationalisation from emerging market firms, SMEs expansion, factors/barriers to SMEs' internationalisation, institutions' and organisations' interaction.

INTRODUCTION

The Chinese authorities are actively pursuing the development and national and international expansion of small and medium-sized enterprises (SMEs) (Ministry of Commerce of the People's Republic of China, 2008a, 2008b, 2008c) considering their important role in entrepreneurship, job creation, technology diffusion, fiscal income, identification and adoption of international best practices, risk diversification, and wealth generation (Cardoza, 1997).

In the early development stage which they are currently in (Boisot, & Meyer, 2008; Ge, & Ding, 2008; Liu, Xiao, & Huang, 2008; Nolan, 2001), Chinese SMEs, may be facing factors/barriers that are promoting/hampering this expansion process and which have to be assessed. Managers, academics, and policy makers need to identify and understand the challenges posed by this expansion process, especially as the current literature on the internationalisation of emerging countries' SMEs is scarce. In addition, it has been suggested that the Chinese outward internationalisation process seems to differ from the patterns seen in other countries (Boisot, & Child, 1996; Buckley, Clegg, Cross, Liu, Voss, & Zheng, 2007; Child, & Tse, 2001; Child, & Rodrigues, 2005; Mathews, 2006; Yamakawa, Peng, & Deeds, 2008). In this context, the international expansion of SMEs from China is worth studying to understand the factors hindering/promoting this internationalisation process.

This paper is structured as follows. First, a review of the literature on the national and international expansion of Chinese firms is presented; this is followed by a description of the main conceptual framework; third, the aims, methodology and analysis of the data are explained; and fourth, the results of the analysis are presented. The paper finishes with a summary and conclusions.

LITERATURE REVIEW

Most of the works on the national and international expansion of Chinese companies are based on large companies. Studies on the expansion of Chinese SMEs are scarce. Nevertheless, and due to the pace of change in the Chinese economy, it could be argued that many of the now relatively large companies were small or medium-sized organisations only a few years ago. Examples of this rapid transformation worth mentioning are what Zeng and Williamson (2003: pp. 3-4) called “competitive networks”, a group of companies that “have taken on world markets by bringing together small, specialized companies that operate in close proximity”, and “technology up-starts”, firms exploiting technology developed by research institutes owned by the government. As a consequence, it would be relatively safe to say that some of the characteristics found in previous studies on China’s international companies may also be applicable, to some extent, to small, medium and large firms.

The process of international expansion of Chinese firms has gone through three main stages: a first, mainly experimental stage up to the 1990s, characterised by a strong supervision from the Government, followed by a second stage during the 1990s, which saw a large increase in the number of Chinese subsidiaries abroad with little strategic focus and many of them reporting losses (Buckley, Clegg, Russell Cross, Voss, & Zheng, 2006; Cai, 1999; Quan, 2001; Warner, Ng, & Xu, 2004; Zhang, & Van Den Bulcke, 1996). A third stage has started recently as a “number of leading Chinese firms have begun to internationalise with a view to becoming global players in international markets” (Child, & Rodrigues, 2005).

Previous works have also suggested that Chinese firms operating overseas present unique characteristics. First, they tend to lean on ethnic and other similar networks for business opportunities, relations with local authorities, and management of labour (Brown, 1995; Lecraw, 1993; Yeung, & Olds, 2000). In this context, Rauch and Trindade (2002) found that “ethnic Chinese networks have a quantitatively important impact on bilateral trade through

mechanisms of market information and matching and referral services, in addition to their effect through community enforcement of sanctions that deter opportunistic behaviour” (p. 129). Boisot and Child (1996) and Yiu, Lau, and Bruton (2007) also said that Chinese managers use these networks as a way of reducing transaction costs and exploring new business opportunities.

A second characteristic was described by Cai (1999) and Rui and Yip (2008) who said that the central and local governments encouraged and directed the outward FDI process up to the mid-1990s, aimed mainly at promoting exports and securing raw materials, although some state-owned companies also used their investments abroad to acquire technology and skills. This interplay between government intervention and the entrepreneurial spirit implicit in mainstream theory was studied by Zhang and Van Den Bulcke (1996), who claimed that the Chinese internationalisation process in the early 1990s was the result of a balance between “the influence of the governmental bureaucratic system” and the “development of a real entrepreneurial logic” (p. 161).

A third characteristic of Chinese international companies was presented by Nolan (2001), who argued that “the competitive capability of China’s large firms after two decades of reform is still painfully weak in relation to the global giants” (p. 187) mainly in the areas of R&D, marketing ability, development of brands, and restriction from the authorities. Nolan continued and suggested that this is probably the result of the government’s protection of the domestic market, advantageous funding conditions, protection of distribution channels and procurement from the government.

Mathews (2006) added three more characteristics: a very rapid internationalisation, an internationalisation achieved through organisational innovations (rather than based on technological innovations), and the development of strategic innovations that enabled “them to exploit their latecomer and peripheral status to advantage” (p. 13).

The Internationalisation of SMEs from China: Conceptual Framework

Child and Rodrigues (2005) argued that these specific characteristics of the Chinese outward internationalisation process need to be analysed using a different perspective. In this context, Mathews proposed an extension of the OLI paradigm (Dunning, 1977) as this traditional model uses “a ‘push-oriented’ concept” from Western MNEs where the firm’s internationalisation “is propelled by some strategic objective”, rather than by a pull and push process that seems to be the reality for most Asian Pacific companies (Mathews, 2006: p. 16). This extended model, LLL (Linkage, Leveraging, and Learning), is supported by the idea that the internationalisation of “EE [emerging markets]-based firms is not necessarily based on the possession of overwhelming assets, but rather on firms’ ability to leverage its capability in organizational learning” (Yamakawa et al., 2008: p. 68).

Mathews claimed that one of the main differences with the traditional view is that “the object of analysis is the barriers to diffusion, seen from the perspective of the incumbent looking to delay the entry by competitors ... by contrast from the perspective of ... [Chinese companies] ... the object of this analysis is how such barriers may be overcome” (2006: p. 19). This claim introduces the first objective of this work, to identify and understand the barriers that hinder the international expansion of SMEs from China. Within this first objective the first hypotheses arise:

H1: SMEs from Ningxia face some internal barriers that hinder their international expansion.

H2: the environment for SMEs in Ningxia presents some external barriers that hinder the firms’ international expansion.

In addition, an institution-based view has emerged in strategy in emerging markets (Meyer, & Peng, 2005; Peng, 2003; Wright, Filatotchev, Hoskisson, & Peng, 2005) that considers internationalisation as the “outcome of the dynamic interaction between organizations and institutions” (Yamakawa et al., 2008: p. 64). In the particular case of Chinese companies (as

shown in the previous section), this interaction is evident in the support from the national and local governments to internationalise their operations (Cai, 1999; Rui, & Yip, 2008) to which Matthews added that SMEs, in particular, have to find ways to offset risks like “joint ventures and other forms of collaborative partnership as a means of gaining entry to foreign markets” (2006: pp. 18-19). Ge and Ding (2008) reached similar conclusions. This idea introduces the second objective of this paper, to analyse the effects (if any) of different ownership types and also of the financial support received from the state (two of the main characteristics of Chinese international firms and also part of the interaction between institutions and organisations).

Within the second objective, two more hypotheses arise:

H3: the ownership by the state facilitates the national and international expansion of SMEs from Ningxia.

H4: financial support from the state facilitates the national and international expansion of SMEs from Ningxia.

All in all, these two sets of objectives attempt to assess, first, the barriers to the internationalisation that SMEs from China face (Mathews’ argument of a push and pull process) and, second, the interaction between institutions and organisations (the first two Ls in the LLL model, Linkage and Leveraging (Mathews, 2006; Yamakawa et al., 2008).

DEFINITIONS, SAMPLE, AND METHODOLOGY

The definition of internationalisation used in this work is comprised of that proposed by Leonidou (2004: p. 281): “the firm’s ability to initiate, to develop, or to sustain business operations” outside their local market, plus that proposed by Mathews (2006: p. 16): “the process of the firm’s becoming integrated in international economic activities” (which covers export activities as well as foreign direct investment). This combined definition intends to take account of the process that take SMEs from local to international markets (within

Learning, the third L in the LLL model (Mathews, 2006)). It also considers the specific situation of an “unusually fragmented” Chinese market, where it has been reported that “access to foreign markets is easier and cheaper than access to most of the country’s domestic markets” (Boisot, & Meyer, 2008: p. 354 and p. 356). In this context, barriers for the national and international expansion of SMEs are those hindering this internationalisation process (Leonidou, 2004).

The definition taken for SMEs is the one given by the National Bureau of Statistics of China and can be seen in Table 1.

[Insert Table 1 around here]

The barriers to the internationalisation were operationalised using Leonidou’s (2004) recollection of barriers hampering the international development of SMEs¹. The definition for these barriers is similar to that proposed by Leonidou (2004).

The data was collected using a questionnaire based on the set of factors/barriers presented by Leonidou (2004). The questionnaire contained different 5-point Likert-type scale questions designed to measure the perception of the barriers examined. It was applied to a convenience sample of 160 senior managers and directors of SMEs in the city of Yinchuan, the Ningxia Hui’s Autonomous Region capital in China’s North West between July 2006 and July 2007 (data from only 125 surveys was used as the replies from the other 35 were not complete). The participants operate within similar idiosyncratic characteristics (managerial,

^[1] Leonidou found two main types of barriers: (i) internal barriers are “associated with organizational resources/capabilities and company approach to export business” and can be broken down into Informational, Functional, and Marketing; on the other hand, (ii) external barriers are those “stemming from the home and host environment within which the firm operates” and can be classified as Procedural, Governmental, Task, and Environmental.

organisational, and environmental) making the barriers operative (Barret, & Wilkinson, 1985) and, as a consequence, a similar contextual view of the challenges faced by their firms can be expected.

Table 2 presents selected answers from the survey. In this figure, it is possible to see that almost 45% of the SMEs in the sample are owned by the state, which is in line with the current situation of the Chinese economy as a whole (Spar, & Oi, 2006). These companies operate mainly in manufacturing (36%), construction (8%), and real estate (7%). Most were founded more than 10 years ago, and the great majority of their managers are men (71%) between 35 and 54 years old, with a university education. Although owned by the state, these companies show a relatively high active participation by members of the managers' families. Most of these SMEs have funded their operations using loans, mainly from state-owned banks, in the last two years.

[Insert Table 2 around here]

The data analysis is based on multivariate regression analyses using *export intensity* (the ratio of sales outside the companies' region of origin, Ningxia, to total sales) as a dependent variable and the answers from the survey as independent variables. *Export intensity*, an established measure of expansion firm performance (Bonaccorsi, 1992; Calof, 1994) and used as a proxy for *integration in international economic activities* in this model, was taken at three different levels: regional, national, and international. This 3-level analysis was designed to assess the firms' ability to leverage their capability in organisational learning proposed by Mathews (2006) and Yamakawa et al. (2008). In addition, it considers the specific characteristics of the Ningxia region, one of the poorest in China with a Gross Regional Product per head of around 30% of that of Shanghai (National Bureau of Statistics of China, 2007), where the relatively low economic development of Ningxia within China suggests that the region's companies are at an early stage in their expansion process and for this reason it

would be worth studying the barriers to cross the region's boundaries at different levels². The models for hypotheses 1 and 2 can be seen in the equations below:

Internal barriers:

$$R_i; N_i; I_i = \alpha + \theta_1 \text{InfoSources}_i + \theta_2 \text{Data}_i + \theta_3 \text{Contacts}_i + \theta_4 \text{Time}_i + \theta_5 \text{Skills}_i + \theta_6 \text{Facilities}_i + \theta_7 \text{Finance}_i + \theta_8 \text{Product}_i + \theta_9 \text{Design}_i + \theta_{10} \text{Quality}_i + \theta_{11} \text{Labels}_i + \theta_{12} \text{Postsale}_i + \theta_{13} \text{Price}_i + \theta_{14} \text{CompPrice}_i + \theta_{15} \text{Credit}_i + \theta_{16} \text{Distribution}_i + \theta_{17} \text{DistAccess}_i + \theta_{18} \text{Representatives}_i + \theta_{19} \text{Control}_i + \theta_{20} \text{Supply}_i + \theta_{21} \text{Warehouses}_i + \theta_{22} \text{Transport}_i + \theta_{23} \text{Promotion}_i + \varepsilon_i \quad (\text{Equation 1})$$

External barriers:

$$R_i; N_i; I_i = \alpha + \theta_1 \text{Paperwork}_i + \theta_2 \text{Communication}_i + \theta_3 \text{Payment}_i + \theta_4 \text{Assistance}_i + \theta_5 \text{DomRegulations}_i + \theta_6 \text{Preferences}_i + \theta_7 \text{Competitiveness}_i + \theta_8 \text{EconEnvironment}_i + \theta_9 \text{ExchRate}_i + \theta_{10} \text{PolInstability}_i + \theta_{11} \text{HostRegulations}_i + \theta_{12} \text{Tariff\&NTB}_i + \theta_{13} \text{Familiarity}_i + \theta_{14} \text{Socio-cultural}_i + \theta_{15} \text{Verbal}_i + \varepsilon_i \quad (\text{Equation 2})$$

where R_i , N_i , and I_i are the *export intensity* at the regional, national, and international level (respectively) of company i ³. The definition of the variables can be seen in Figure 1.

[Insert Figure 1 around here]

For hypotheses 3 and 4 multivariate regressions were also run with *export intensity* at the different levels – regional, national, and international – as dependent variables⁴, and the types

^[2] Ningxia is one of the least developed regions in China, and this initial exploratory study was deemed necessary as there are only a few works on Chinese SMEs outside the more developed cities/regions on the coast (and also because this is one of the first works applying Leonidou's set of barriers to an emerging economy).

^[3] *EconEnvironment*, *ExchRate*, and *PolInstability* were not included in the Regional and National expansion models as they do not apply. They were only included in the International expansion model.

^[4] Export intensity (the ratio of sales outside the companies' region of origin, Ningxia, to total sales); same reasons to the internal and external barriers apply.

of ownership of the SMEs and the funding sources in the last two years as independent variables. The models can be seen in Equation 3 and Equation 4. It is expected that the results show positive effects, i.e. the participation of the government in the capital of the firms and its financial support will be instrumental in the national and international expansion of SMEs.

Ownership types

$$R_i; N_i; I_i = \alpha + \theta_1 \text{Family}_i + \theta_2 \text{SpecialPartnerships}_i + \theta_3 \text{FinancialInstitutions}_i + \theta_4 \text{State}_i + \varepsilon_i$$

(Equation 3)

Funding sources

$$R_i; N_i; I_i = \alpha + \theta_1 \text{Personal}_i + \theta_2 \text{State}_i + \theta_3 \text{Private}_i + \varepsilon_i \quad (\text{Equation 4})$$

where R_i , N_i , and I_i are the *export intensity* at the regional, national, and international level (respectively) of company i .

In Equation 3 the independent variables represent different ownership types (which are measured using the percentage of their stake in the company). *Special Partnerships* include Joint Ventures (JV), Original Equipment Manufacturing (OEM) agreements, and other partnership types with international companies.

In Equation 4, (i) *Personal* sources include the answers under the following headings: Own Savings, Family, Second Mortgage, Credit Card, Loans from Friends, Inheritance, and Pension; (ii) *State* sources comprise Overdrafts, Subsidies, Leasing, Loans from Banks, and Subsidised Loans; and (iii) *Private*, contains Venture Capital, Suppliers, Other Business, Previous Years' Profits, Private Investors, and Depreciation. In this model it is important to mention that the great majority of the banks in Ningxia are owned by the state (local or national).

Robustness Checks

The models were checked for regression assumptions. The first check was specification, the omission or inclusion of irrelevant variables and the selection of an incorrect functional form. This check can be seen in the process from Reg 1 to Reg 2 (Tables 5, 6, 8, and 10) from where the preferred model emerged. This process was carried out to test the robustness of the model, to avoid losses in the accuracy of the relevant coefficients' estimates, and to avoid a biased coefficient by estimating a linear function when the relationship between variables was nonlinear (Schroeder, Sjoquist, & Stephan, 1986). Secondly, different measures were put in place to avoid measurement errors, such as back translations and pilot testing of the questionnaire, data collected in similar contexts (as explained above), and the use of reliable sources to obtain second-hand data. Thirdly, t-statistics were adjusted by a heteroskedasticity correction in the regressions (White, 1980)⁵ to test if error terms depend on factors included in the analysis. Finally, autocorrelation was checked by calculating the Durbin-Watson coefficient, and multicollinearity was tested through an analysis of the correlation coefficients between the variables in the model and the calculation of the Variance Inflation Factor (VIF).

RESULTS

Internal and External barriers models

Table 3 and Table 4 present the correlations matrices for both the internal and external barriers models. These tables show the Kendall's τ coefficient as the equi-distance in the Likert scales cannot be justified. In these tables it is possible to see that a relatively high correlation seems to exist between *Price* and *PostSale*, *Representatives* and *DistAccess*, and

[5] White proposed to analyse the R^2 of a regression equation that includes the squared residuals from a regression model with the cross-product of the regressors and squared regressors.

Control and *Representatives* for internal barriers; and between *Communication* and *Paperwork*, *Payment* and *Communication*, and *Tariff&NTB* and *HostRegulations* for external barriers. These relatively high correlations are, to a certain extent, expected owing to the nature of the variables presented by Leonidou and the apparent closeness of the concepts measured. The variables were not dropped from the model as it was considered that, even including the closeness of the concepts, the variables do not depart from their independence mainly owing to the different contexts and purposes of the original data. The same applies for the relatively high VIF in *PostSale* in Table 3 (especially as multicollinearity does not reduce the predictive power or reliability of the model as a whole and dropping this variable may result in losing information in this exploratory study). The Durbin Watson coefficients of the different models do not show autocorrelation⁶.

Equation 1 was calculated twice and the results can be seen in Table 5. Panel A shows the results of the regressions using R_i as dependent variable. In the first regression (Reg 1) it is possible to see that there is some role for *Quality*, *Price*, *Credit* and *Supply*. The second regression (Reg 2) resulted in only *Price* and *Credit* presenting a statistical significance above 90% ($|\beta_m/S_b| > t_{n-3; 0.9}$). Panel B contains the outcomes of the regressions using N_i as dependent variable, the first regression (Reg 1) shows that *Facilities*, *Design*, *Quality*, *Labels*, *PostSale*, and *Transport* have some impact on the national sales. Then the second regression was run with these variables and the results show that *Labels* and *PostSale* present statistical significance above 90% ($|\beta_m/S_b| > t_{n-3; 0.9}$). Finally, when Equation 1 was run again in a similar

^[6] Durbin Watson coefficient: Internal: $d_t=2.140$; $d_n=1.522$; $d_i=2.060$. External: $d_t=2.043$; $d_n=2.021$; $d_i=1.875$. The test shows that there is no statistical evidence that the error terms are positively or negatively autocorrelated for the great majority of the models, with the exceptions of Internal d_n for positive, Internal d_t for negative, and Internal d_i for positive and negative for which the test is inconclusive.

way using I_i as a dependent variable (Panel C), the first regression showed that *Contacts*, *Time*, *Design*, *PostSale*, *Price*, *Credit*, *DistAccess* and *Representatives* have some impact, and then Reg 2 showed that only *Time*, *Design* and *DistAccess* present a statistical significance over 90% ($|\beta_m/S_b| > t_{n-3; 0.9}$). This accepts H1.

Table 6 presents the results of the external barriers model (Equation 2). Panel A shows the results of the regressions using R_i as dependent variable; in the first regression (Reg 1) it is possible to see that none of the variables seem to act as barriers to cross the boundaries of the region. Equation 2 was then calculated twice. Panel B contains the outcomes of the regressions using N_i as dependent variable where the first regression (Reg 1) shows that *Assistance*, and *DomRegulations* have some impact on the national sales. Then the second regression was run with these variables and the results confirm that *Assistance* and *DomRegulations* present statistical significance above 90% ($|\beta_m/S_b| > t_{n-3; 0.9}$). Finally, Equation 2 was run again in a similar way using I_i as a dependent variable (Panel C). The first regression showed that *Paperwork*, *Communication*, *Payment*, *Competitiveness*, and *ExchRate* have some impact, and then Reg 2 showed that only *Communication*, *Payment* and *ExchRate* present a statistical significance over 90% ($|\beta_m/S_b| > t_{n-3; 0.9}$). This accepts H2.

[Insert Tables 3, 4, 5, and 6 around here]

Ownership and Funding Sources Models

Table 7A presents the correlation matrix for the ownership model using the Pearson coefficient. In the table it is possible to see that a relatively high correlation seems to exist between *State* and *SpecialPartnerships*, along with a relatively high VIF. For this reason, the

latter was dropped from the model. Table 7B presents the correlation matrix without this variable⁷.

Table 8 shows the results of running Equation 3; Panel A, Panel B, and Panel C present the outcome with R_i , N_i , and I_i as independent variables respectively. As can be seen, none of the ownership types seem to affect the regional, national and international expansion of the SMEs in the Ningxia region. This rejects H3.

Table 9 presents the correlation matrix for the Funding Sources model using the Pearson coefficient, where it is possible to see that no high correlation seems to exist among the variables. The VIF does not show multicollinearity and the Durbin Watson coefficient shows that there is no statistical evidence that the error terms are positively or negatively autocorrelated in the three models⁸.

Table 10 shows the results of running Equation 4, Panel A with R_i , Panel B with N_i , and Panel C with I_i respectively. As can be seen, in the first stage of the expansion (regional level, Panel A) the support from the *State* presents a statistical significance above 90% ($|\beta_m/S_b| > t_{n-3; 0.9}$), and the funding from *Private* sources plays a significant role in the SMEs' international expansion (Panel C). This rejects H4.

[Insert Tables 7A, 7B, 8, 9, and 10 around here]

DISCUSSION

Figure 2 shows a summary of the barriers to national and international expansion faced by Ningxia's SMEs resulting from Equations 1 and 2. In this figure it is possible to see that

^[7] Durbin Watson coefficient: Ownership: $d_r=2.027$; $d_n=1.746$; $d_i=1.947$. The test shows that there is no statistical evidence that the error terms are positively or negatively autocorrelated in the three models.

^[8] Durbin Watson coefficient: Funding: $d_r=2.190$; $d_n=1.765$; $d_i=2.005$.

SMEs from Ningxia face fewer barriers (31.5% of the total recollected by Leonidou (2004) assuming an equal weighting) to their expansion than their Western counterparts. This finding was not expected as it could be presumed that companies from an emerging country would face more barriers than companies operating in more developed economies. A possible explanation is that the questionnaire used to collect the data did not include those barriers that are specific in China, and therefore further research is necessary to design a better and more complete instrument.

Second, Ningxia's SMEs do not perceive *Finance* as a barrier to their expansion, a barrier mentioned widely in the literature on Western SMEs. This could be explained by the strong support from the government in terms of ownership and loans from state-owned banks (one of the characteristics of Chinese international firms identified in previous works). A similar conclusion was reached by Ge and Ding (2008) in their study of Galanz.

Third, the results suggest that Chinese SMEs face different barriers to cross the regional and national boundaries during the process of business expansion. Overcoming these obstacles generates useful knowledge that becomes key for the next stages in international expansion. The evidence collected supports Mathews' (2006) idea of leverage of organisational learning.

Also, these findings are among the first to provide empirical support to Boisot and Meyer's propositions (2008) related to the barriers in the fragmented domestic Chinese market. In this sense, in the future it would be interesting to study the firms' balance between the liability of newness and that of foreignness faced by Ningxia's SMEs when crossing domestic and international boundaries.

[Insert Figure 2 around here]

The results from Hypothesis 3 and 4 suggest that ownership by the state does not play a significant role in promoting the SMEs' international expansion. However, the study has also shown that: (i) support from the state in the form of funding seems to be instrumental in the

first stages of their (local and regional) expansion, and (ii) support from private sources is relevant to cross national boundaries. These findings are in line with the conclusions from previous works (Cai, 1999; Child, & Rodrigues, 2005; Fornes, & Butt-Philip, 2009; Ge, & Ding, 2008; Mathews, 2006; Yamakawa et al., 2008; Zeng, & Williamson, 2003; Zhang, & Van Den Bulcke, 1996) and add a new dimension by showing that different stages in the expansion process are fuelled by the support of different sources. In other words, the first push seems to be given by financial help from the government, and the second by financial support from private sources.

This private support is also usually linked to a transfer of the knowledge and skills needed to operate in international markets (Linkage in Mathew's (2006) LLL framework). It also seems to provide support to Mathews' (2006) claim that the internationalisation of companies from China is based on a push and pull (from the local SMEs and from the government or international partner in this case, respectively) process, rather than propelled only by a push process based on strategic objectives, as in Western companies.

On the other hand, the fact that state ownership does not play a relevant role in promoting the firms' expansion could be interpreted within the findings from Child and Rodrigues (2005), that Chinese state-owned companies' strategic position "could be weakened by the way they remain beholden to administrative approval and ... a legacy of institutional dependence". In this sense, Liu, Xiao, and Huang (2008: p. 505) added that "Chinese entrepreneurs are bounded by... unfavourable institutional arrangements". The results obtained in this analysis are one of the first to provide empirical evidence of the effects of state ownership and financial support in Chinese SMEs.

An analysis of the results from the four models tends to suggest that there are many gaps that still need to be filled in the study of Chinese SMEs. A similar analysis, but with a set of country specific barriers (rather than Leonidou's collection from SMEs operating in advanced

economies), seems to be necessary to fully grasp the difficulties encountered by SMEs in China. In this sense, some areas for future research, among others, may include the barriers posed by the administrative system and higher logistics costs⁹ (Boisot, & Meyer, 2008; Ge, & Ding, 2008), the role of home country networks in facilitating international venturing (Yiu et al., 2007), and how the institutional environment influences the decision making of Chinese companies in their internationalisation process (Rui, & Yip, 2008).

The role of JV or OEMs in the internationalisation process is also an area for future research. Child and Rodrigues (2005) suggested that this is one of the main routes taken by Chinese companies, Ge and Ding (2008) found that this kind of partnership was key in Galanz's expansion, and this work showed that financial support from private sources encourages the crossing of national boundaries. Further works in this area based on evidence from a large number of companies seem to be necessary to completely understand the impact of foreign companies in the internationalisation process of Chinese SMEs.

SUMMARY AND CONCLUSIONS

This research work, the first of a series planned to study the internationalisation of SMEs from emerging markets¹⁰, analysed the facilitators and barriers to the internationalisation of SMEs in one of the least developed regions of China, following Mathews' (2006) argument that one of the objects of analysis in the international expansion of companies from emerging

^[9] The fact that *DomRegulations* appears as a barrier in this work seems to support Boisot and Meyer's proposition.

^[10] Studies are being carried out in Jiangsu Province , Anhui Province , and Shandong Province in China; and data is being collected in Brazil, Mexico, Peru, and Colombia). These works are attempting to incorporate the findings and lessons from this first exploratory study; the focus of these research projects are now guided by the areas for future research included in the previous paragraph (discussion section).

markets are the barriers that these firms need to overcome. The data was collected using a questionnaire based on Leonidou's (2004) barriers to the international expansion of SMEs in Europe and North America; the data collected also included information related to the specific characteristics of Chinese companies, mainly ownership types and sources of funding. The exploratory study was based on multivariate regressions where the dependent variables were the export intensity (at three levels: regional, national, and international) of 125 SMEs from Ningxia, and the independent variables were the answers from the questionnaire (internal and external barriers, ownership, and funding sources).

The results of the analysis present a situation where seven internal and five external barriers are hindering the expansion of Ningxia's SMEs. These barriers can be grouped into four main areas: (i) Product, including *Price*, *Labels*, and *Design*; (ii) Operations and Logistics, including *PostSales* and *DistAccess*; (iii) Knowledge of International Finance, including *Credit*, *Payment*, and *ExchRate*; and finally (iv) Skills including *Assistance*, *Communication*, and *Time*. This grouping shows that the barriers are related mainly to weak management skills and knowledge regardless of the difference between internal and external. These findings suggest that Ningxia's SMEs share this characteristic with other Chinese international companies as identified by previous works (Ge, & Ding, 2008; Liu et al., 2008; Nolan, 2001; Rugman, & Li, 2007). It is also worthy of note that *Finance* does not seem to be a barrier to national and international expansion as is the case in most Western SMEs. This may be explained by the active role played by a resourceful Chinese government in funding the development of the country's SMEs.

On the other hand, the analysis of the data collected in Ningxia shows that ownership types do not play a relevant role in the expansion of the region's SMEs. However, the support from the government in the form of funds seems to play an important role in the first stages of the firms' expansion. In addition, the study shows that support from private sources is relevant to

crossing the country's limits. These results seem to suggest that different types of support are needed at different stages in the SMEs' expansion process which lends support to the third L of the LLL framework (Mathews, 2006: p. 20) as the repeated "application of linkage and leverage [the first and second Ls] processes may result in the firm learning to perform such operations more effectively."

The results presented in this work aim to contribute to the literature on the international expansion of companies, especially SMEs from emerging economies and specifically from China. In this context, one of the contributions is that, from what has been found in this work, the existing literature based on Western SMEs does not seem to accommodate adequately the specificity of the Chinese SMEs' outward internationalisation process (a similar conclusion has been reached in previous papers (Boisot, & Meyer, 2008; Buckley et al., 2007; Child, & Tse, 2001; Child, & Rodrigues, 2005; Rui, & Yip, 2008; Yamakawa et al., 2008)). It also provides empirical evidence to support Mathews' (2006) proposal that firms from emerging markets are driven by a push and pull process which leads, first, to overcoming a set of barriers, and, second, to Linkage, Leverage, and Learning (LLL) activities.

The findings presented in this paper are among the first to show that different barriers apply to the different stages in the firms' expansion, an extension of Mathew's (2006) Learning (third L in LLL). This work is also one of the first to provide empirical evidence of the effects of the ownership by the state and its financial support in Chinese SMEs.

There are also contributions for policy makers and SMEs' managers to improve the effectiveness of their policies and decisions. The results show that they need to establish a specialised infrastructure offering value-added information services to act as an active interface between the international market and the local SMEs. In addition, companies, unions, and public and private institutions need to develop management training programmes in international business, including studies on partnerships, joint ventures, marketing,

payment methods, etc. These programmes should aim at filling the skills gap in the professional profile of entrepreneurs and managers.

To conclude, and more broadly, the national and international expansion of emerging countries' SMEs presents interesting routes for developing the IB agenda. In this sense, Buckley (2002) suggested that one of the potential areas for IB research in the future is the identification of trends towards and away from globalisation, to which Peng (2004) added that future studies need to have a focus on the factors affecting the success and failure of firms in international markets. From what this article has presented it is possible to argue that the factors and barriers promoting or hindering the international expansion of SMEs in one of the least developed regions in China, along with an analysis of the interaction between institutions and organisations, are all affecting globalisation, and as a consequence, the internationalisation of firms in ways which have yet to be understood.

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TABLE 1: DEFINITION OF SMALL AND MEDIUM-SIZED ENTERPRISES

	Employees	Sales	Total Assets
Industry	2,000	3,000	4,000
Construction	3,000	3,000	4,000
Wholesale	200	3,000	
Retail	500	1,000	
Transportation	3,000	3,000	
Postal Service	1,000	3,000	
Accommodation & Restaurant	800	3,000	

Source: (National Bureau of Statistics of China, 2007)

TABLE 2: SELECTED ANSWERS FROM THE SURVEY (n=125)

Age of respondent		Gender of respondent		Studies of respondent		State-owned	Active Participation of family members			Funding sources in the last two years				% of SMEs with sales in different markets				
35-44	45-54	M	F	UG	PG		Sons	Husband / wife	Father / mother	Loans from banks	Own savings	Previous years' profits	Subsidised loans	76-100% Domestic	76-100% Regional	76-100% National	26-75% RoW	76-100% RoW
49%	25%	71%	29%	86%	9%	45%	28%	24%	10%	32%	11%	9%	6%	28%	12%	8%	3%	2%

Profits during last year					Main Activity												Years since start-up	
Decreased	Slightly decreased	Kept at same level	Slightly increased	Increased	Manufacture	Hotel / Restaurant	Retail	Wholesale	Prof. Services	IT	Construction	Transport	Real estate	Finance / insurance	Health / Education	Others	6-10	>10
14%	7%	9%	35%	34%	36%	3%	1%	6%	7%	1%	8%	3%	6%	7%	4%	19%	16%	67%

FIGURE 1: DEFINITION OF VARIABLES (SCALE VARIABLES USING A 5-POINT LIKERT-TYPE SCALE)

Internal Barriers		External Barriers	
InfoSources	The company does not have access to the relevant information sources to identify external markets for the company's products and services	Paperwork	It is considered that the paperwork related to exports is complicated and costly
Data	The company does not have the relevant data to assess the possibilities that the international markets are offering	Communication	Communication difficulties affect the normal development of business abroad
Contacts	The company has difficulties to identify and contact potential customers in markets overseas	Payment	Payment collections make export activities more difficult
Time	The daily management of the company does not give enough time to think about exports	Assistance	The government does not offer adequate assistance and incentives to carry out export activities
Skills	There are no persons in the company with the right skills to manage export-related activities	DomRegulations	The regulations in place make it more difficult to capitalise on opportunities in international markets
Facilities	Limited production facilities do not allow the company to consider exports	Preferences	The different preferences, patterns, prices, and communication of customers in international markets make exports more difficult
Finance	The company does not have access to the necessary financial resources to fund an export-oriented plan	Competitiveness	The target international markets are perceived as highly competitive
Product	The current product portfolio is not adequate to serve the identified international markets	EconEnvironment	The deterioration of the countries' economic environment is an additional barrier to exports
Design	The design of the firm's products is not adjusted to the needs and tastes of customers in markets overseas	ExchRate	Exchange rate variations represent an important risk for the company's exports
Quality	The products' quality standards do not meet the needs of customers in international markets	PolInstability	The political instability in external markets is seen as a barrier to exports
Labels	The products' labels and packaging do not meet the requirements of the target markets	HostRegulations	The different regulations in external markets make access and operations more difficult
PostSale	The company does not have the means to offer an adequate post-sale service to its customers overseas	Tariff&NTB	The tariff and non-tariff barriers in international markets restrict export activities
Price	The retail price of the company's products are not adequate for the final consumers in international markets	Familiarity	The lack of familiarity with commercial practices abroad affect the company's operations
CompPrice	The company finds it difficult to meet the competitors' prices in the targeted international markets	Socio-cultural	The socio-cultural differences (religion, values, customs, attitudes, etc.) are considered obstacles to export activities
Credit	It is difficult for the company to give credit to customers in international markets	Verbal	The differences in verbal and non-verbal language affect the activities carried out in external markets
Distribution	The company finds the distribution channels complex to serve international markets		
DistAccess	It is complex and costly to access the distribution channels to export the company's products		
Representatives	It is difficult to find reliable representatives abroad		
Control	It is difficult to exercise effective control over the middlemen in international markets		
Supply	The company finds many difficulties in supplying adequately international markets		
Warehouses	The countries where the company exports to do not have adequate warehouse facilities		
Transport	The company considers that the transport and insurance costs related to exports are excessive		
Promotion	It is difficult to adjust the promotional activities to international markets		

TABLE 3: CORRELATION MATRIX FOR THE INTERNAL BARRIERS MODEL - KENDALL'S τ COEFFICIENT

	InfoSources	Data	Contacts	Time	Skills	Facilities	Finance	Product	Design	Quality	Labels	PostSale	Price	CompPrice	Credit	Distribution	DistAccess	Representatives	Control	Supply	Warehouses	Transport	Promotion	VIF
InfoSources	1.000																							1.826
Data	.273(**)	1.000																						1.916
Contacts	0.012	-0.099	1.000																					1.802
Time	-0.123	-.244(**)	.246(**)	1.000																				1.902
Skills	.273(**)	.276(**)	-.192(*)	-.385(**)	1.000																			2.206
Facilities	-0.042	-.179(*)	.185(*)	.336(**)	-.234(**)	1.000																		1.859
Finance	0.049	0.116	0.025	0.034	0.039	.272(**)	1.000																	1.414
Product	0.044	-.193(*)	.252(**)	.217(**)	-0.139	.282(**)	0.056	1.000																1.868
Design	.163(*)	.263(**)	-0.111	-0.119	.423(**)	-0.116	0.008	-0.086	1.000															2.571
Quality	.160(*)	0.127	-.197(*)	-.227(**)	.429(**)	-0.085	0.044	0.022	.497(**)	1.000														2.040
Labels	.221(**)	.239(**)	-.160(*)	-.195(*)	.419(**)	-.172(*)	0.090	-.230(**)	.225(**)	.282(**)	1.000													1.952
PostSale	0.049	0.165	-.215(*)	-.233(*)	.471(**)	-0.136	0.076	-0.046	.460(**)	.376(**)	.498(**)	1.000												7.337
Price	0.108	0.095	0.006	-0.132	.298(**)	-0.145	0.141	0.043	.266(**)	.297(**)	.284(**)	.600(**)	1.000											4.099
CompPrice	-.196(*)	-0.015	0.150	.248(**)	-.238(**)	.164(*)	0.147	0.066	-.243(**)	-.224(**)	-0.118	-.240(*)	-.189(*)	1.000										1.723
Credit	-0.040	-0.111	0.124	.244(**)	-.312(**)	.244(**)	0.101	0.048	-.230(**)	-.305(**)	-.186(*)	-.384(**)	-.288(**)	.346(**)	1.000									1.926
Distribution	-.156(*)	-.214(**)	.226(**)	.322(**)	-.307(**)	.321(**)	0.146	.333(**)	-0.139	-.200(**)	-.365(**)	-.290(**)	-0.016	.322(**)	.262(**)	1.000								3.173
DistAccess	-0.084	-.196(*)	.286(**)	.270(**)	-.308(**)	.235(**)	0.028	.271(**)	-.199(*)	-.160(*)	-.225(**)	-0.155	-0.100	.285(**)	.296(**)	.453(**)	1.000							2.740
Representatives	-0.111	-0.138	.192(*)	.334(**)	-.305(**)	0.130	-0.002	0.134	-0.101	-.158(*)	-.237(**)	-0.140	-0.078	.254(**)	.259(**)	.337(**)	.538(**)	1.000						3.291
Control	-0.103	-0.117	.292(**)	.225(**)	-.223(**)	0.027	0.035	.272(**)	-0.031	-0.099	-.180(*)	-0.088	0.010	.260(**)	.171(*)	.349(**)	.428(**)	.667(**)	1.000					3.222
Supply	-0.004	-0.130	.215(**)	.226(**)	-.183(*)	0.075	0.023	.268(**)	-0.126	-0.093	-0.150	-.252(*)	0.016	.281(**)	.280(**)	.381(**)	.402(**)	.388(**)	.478(**)	1.000				2.371
Warehouses	0.048	-0.076	0.055	0.000	0.015	-0.017	0.018	-0.120	-0.008	-0.068	-0.050	-0.050	.214(**)	0.014	0.147	.180(*)	.207(**)	.195(*)	0.098	.292(**)	1.000			1.904
Transport	0.098	-0.017	0.070	0.006	-0.039	-0.030	-0.116	0.118	0.096	0.037	-.189(*)	-0.144	0.053	0.075	0.117	.288(**)	.190(*)	.191(*)	.200(*)	.360(**)	.345(**)	1.000		1.604
Promotion	0.033	-.226(**)	0.088	0.105	-0.036	0.009	-0.108	0.152	0.020	-0.069	-0.010	0.005	0.091	0.134	0.149	.274(**)	.295(**)	.274(**)	.228(**)	.430(**)	.280(**)	.288(**)	1.000	1.818

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

TABLE 4: CORRELATION MATRIX FOR THE EXTERNAL BARRIERS MODEL - KENDALL'S τ COEFFICIENT

	Paperwork	Communication	Payment	Assistance	DomRegulations	Preferences	Competitiveness	EconEnvironment	ExchRate	PolInstability	HostRegulations	Tariff&NTB	Familiarity	Socio-cultural	Verbal	VIF
Paperwork	1.000															2.320
Communication	.502(**)	1.000														2.067
Payment	.450(**)	.503(**)	1.000													2.089
Assistance	0.151	0.065	0.046	1.000												1.394
DomRegulations	0.133	0.028	.163(*)	0.155	1.000											1.437
Preferences	.306(**)	.246(**)	.156(*)	0.136	.225(**)	1.000										1.501
Competitiveness	- 0.144	- 0.091	- 0.153	.246(*)	0.152	0.213	1.000									1.940
EconEnvironment	.240(**)	.239(**)	.180(*)	0.107	.218(**)	0.110	0.213	1.000								1.716
ExchRate	0.097	- 0.002	0.118	0.046	.234(**)	.173(*)	.324(**)	.425(**)	1.000							1.731
PolInstability	0.137	0.079	0.043	.208(**)	.180(*)	0.148	0.174	.344(**)	.410(**)	1.000						1.811
HostRegulations	.308(**)	0.153	0.074	0.133	.254(**)	.196(*)	0.177	.290(**)	.302(**)	.480(**)	1.000					2.246
Tariff&NTB	.162(*)	0.128	0.109	0.019	.252(**)	.232(**)	0.080	.315(**)	.295(**)	.279(**)	.530(**)	1.000				1.978
Familiarity	.168(*)	0.133	0.145	0.130	.354(**)	.198(*)	.311(**)	.163(*)	.226(**)	.309(**)	.464(**)	.320(**)	1.000			1.562
Socio-cultural	0.090	.193(*)	0.135	0.061	0.141	.167(*)	- 0.020	.246(**)	.163(*)	.340(**)	.291(**)	.474(**)	.253(**)	1.000		1.628
Verbal	.225(**)	.226(**)	.366(**)	.173(*)	.328(**)	.154(*)	- 0.076	.266(**)	.204(**)	.256(**)	.240(**)	.326(**)	.227(**)	.366(**)	1.000	1.642

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

TABLE 5: RESULTS FROM A REGRESSION – INTERNAL BARRIERS MODEL

	Panel A: dependent variable R_i				Panel B: dependent variable N_i				Panel C: dependent variable I_i			
	Reg 1		Reg 2		Reg 1		Reg 2		Reg 1		Reg 2	
	β	t	β	t	β	t	β	t	β	t	β	t
a	-0.19	-0.38	-0.18		0.33	0.93	0.09		-0.08	-0.31	0.09	0.49
InfoSources	-0.04	-0.49			-0.01	-0.16			0.03	0.68		
Data	-0.01	-0.15			0.04	0.88			0.03	0.76		
Contacts	0.01	0.19			-0.04	-0.82			-0.04	-1.09	-0.03	-0.99
Time	0.04	0.74			-0.04	-0.89			0.04	1.24	0.05	1.99
Skills	0.02	0.30			-0.01	-0.22			-0.02	-0.47		
Facilities	0.00	0.06			0.05	1.20	0.01	0.17	0.02	0.52		
Finance	-0.03	-0.51			0.02	0.40			0.01	0.33		
Product	0.02	0.26			0.00	0.06			0.00	-0.01		
Design	-0.04	-0.58			0.05	0.98	0.05	1.29	-0.08	-1.89	-0.07	-2.69
Quality	0.08	1.18	0.04	0.12	-0.08	-1.60	-0.06	-1.33	-0.03	-0.71		
Labels	0.00	-0.01			0.07	1.43	0.09	2.32	0.00	0.09		
PostSale	-0.07	-0.47			-0.17	-1.54	-0.13	-2.62	0.09	1.11	0.06	1.28
Price	0.11	1.12	0.06	0.18	0.02	0.22			-0.07	-1.37	-0.05	-1.41
CompPrice	0.07	0.93			-0.01	-0.10			0.02	0.53		
Credit	0.08	1.14	0.10	0.28	-0.02	-0.32			-0.04	-0.94	-0.01	-0.33
Distribution	-0.07	-0.82			-0.04	-0.65			0.02	0.47		
DistAccess	0.00	0.02			-0.02	-0.42			0.07	1.53	0.09	2.73
Representatives	-0.02	-0.22			-0.03	-0.42			-0.07	-1.34	-0.04	-1.13
Control	0.03	0.29			0.05	0.66			0.03	0.65		
Supply	-0.10	-1.13	-0.05	-0.14	0.01	0.11			0.02	0.41		
Warehouses	0.03	0.37			0.04	0.70			0.01	0.31		
Transport	0.04	0.46			0.07	1.17	0.05	1.10	0.00	0.03		
Promotion	-0.02	-0.19			-0.04	-0.68			0.02	0.50		
R^2	0.18		0.08		0.34		0.20		0.44		0.35	

TABLE 6: RESULTS FROM A REGRESSION – EXTERNAL BARRIERS MODEL

External Barriers												
	Panel A: dependent variable R_i				Panel B: dependent variable N_i				Panel C: dependent variable I_i			
	Reg 1		Reg 2		Reg 1		Reg 2		Reg 1		Reg 2	
	β	t	β	t	β	t	β	t	β	t	β	t
a	0.28	0.98			0.19	0.82	0.15	1.41	-0.06	-0.32	-0.06	-0.43
Paperwork	-0.05	-0.66			0.00	0.07			0.06	1.23	0.05	1.44
Communication	0.04	0.63			0.00	0.04			-0.07	-1.61	-0.08	-2.21
Payment	0.00	0.05			-0.02	-0.38			0.08	1.77	0.09	2.35
Assistance	0.04	0.60			-0.09	-1.76	-0.09	-3.06	0.00	0.05		
DomRegulations	0.00	-0.01			0.07	1.21	0.07	1.97	0.03	0.64		
Preferences	0.04	0.66			-0.01	-0.12			-0.02	-0.67		
Competitiveness	-0.04	-0.59			-0.01	-0.14			0.05	1.07	0.05	1.50
EconEnvironment									0.00	0.08		
ExchRate									-0.07	-1.34	-0.07	-1.84
PolInstability									0.00	0.13		
HostRegulations	-0.04	-0.50			0.03	0.48			-0.01	-0.20		
Tariff&NTB	0.03	0.39			0.01	0.12			-0.01	-0.16		
Familiarity	0.03	0.42			-0.04	-0.64			0.01	0.24		
Socio-cultural	-0.01	-0.16			0.00	-0.06			-0.02	-0.55		
Verbal	-0.04	-0.71			0.01	0.18			0.00	0.08		
R ²	0.04				0.11		0.09		0.20		0.17	

FIGURE 2: BARRIERS TO NATIONAL AND INTERNATIONAL EXPANSION

Internal			External		
Regional	National	International	Regional	National	International
Price	Labels	Time		Assistance	Communication
Credit	PostSales	Design		DomRegulations	Payment
		DistAccess			ExchRate

TABLE 7A: CORRELATION MATRIX FOR THE OWNERSHIP MODEL – PEARSON’S ρ COEFFICIENT

	Family	SpecialPartnerships	FinancialInstitutions	State	VIF
Family	1.000				4.315
SpecialPartnerships	-0.063	1.000			16.144
FinancialInstitutions	-0.053	-0.143	1.000		6.649
State	-.320(**)	-.746(**)	-.365(**)	1.000	20.858

**. Correlation is significant at the 0.01 level (2-tailed).

TABLE 7B: CORRELATION MATRIX FOR THE OWNERSHIP MODEL WITHOUT HIGH CORRELATION VARIABLES – PEARSON'S ρ COEFFICIENT

	Family	FinancialInstitutions	State	VIF
Family	1.000			1.156
FinancialInstitutions	-0.053	1.000		1.198
State	-.320 (**)	-.365 (**)	1.000	1.331

**, Correlation is significant at the 0.01 level (2-tailed).

TABLE 8: RESULTS FROM A REGRESSION – OWNERSHIP MODEL

Ownership												
	Panel A: dependent variable R _i				Panel B: dependent variable N _i				Panel C: dependent variable I _i			
	Reg 1		Reg 2		Reg 1		Reg 2		Reg 1		Reg 2	
	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>	β	<i>t</i>
a	0.21	2.81			0.15	2.20			0.07	1.42		
Family	0.11	0.56			0.03	0.18			0.13	1.01		
FinancialInstitutions	0.07	0.42			-0.04	-0.27			-0.07	-0.73		
State	0.05	0.59			-0.01	-0.12			0.02	0.32		
R ²	0.01				0.00				0.02			

TABLE 9: CORRELATION MATRIX FOR THE FUNDING SOURCES MODEL – PEARSON’S ρ COEFFICIENT

	Personal	State	Private	VIF
Personal	1.000			1.010
State	- 0.088	1.000		1.008
Private	0.049	0.013	1.000	1.003

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

TABLE 10: RESULTS FROM A REGRESSION – FUNDING SOURCES MODEL

Funding Sources												
	Panel A: dependent variable				Panel B: dependent variable				Panel C: dependent variable			
	R_i				N_i				I_i			
	Reg 1		Reg 2		Reg 1		Reg 2		Reg 1		Reg 2	
	β	t	β	t	β	t	β	t	β	t	β	t
a	0.22	3.80			0.16	3.27			0.10	2.83		
Personal	-0.01	-0.16			0.00	-0.11			-0.03	-1.33		
State	0.08	1.88			-0.04	-1.15			0.02	0.73		
Private	-0.04	-1.07			0.01	0.17			-0.04	-1.68		
R ²	0.04				0.01				0.04			